System 1™ and Snapshot™ for Windows® CE
Setting the standard …

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System 1™, Bently Nevada's exciting new machinery management platform, will soon be released. Over the past year, Bently Nevada has been talking about the development of this open and integrated platform with its single display environment, open database, and multiple means of data acquisition. This initial release offers portable data collection as the first method of data acquisition that we are supporting. Continuous online data acquisition support will follow later in 2000, along with Decision Support℠ and performance monitoring.

Incorporating the features of Bently Nevada's many stand-alone software applications for machinery management, System 1™ integrates these separate applications and adds greatly expanded functionality, enabling machinery management professionals to manage all their machinery assets with a single system. As a platform, System 1™ will integrate a host of condition monitoring devices and technologies into a single system with a unified display environment and common database structure, resulting in reduced training requirements for users and lower implementation and support costs.

As well, System 1™ will provide a variety of industry-standard interfaces including OLE for Process Control (OPC), enabling external integration with a multitude of control and automation applications. This external integration provides the ability to correlate data and information both within System 1™ and within other complementary control and automation applications, including human interfaces, data historians, maintenance management systems, and others.

System 1™ has been developed for the Microsoft® Windows NT® operating system, taking advantage of the substantial installed base, the intuitive interface, and the many features of this industry-standard operating system. Just one operating system to lower system-sustaining costs!
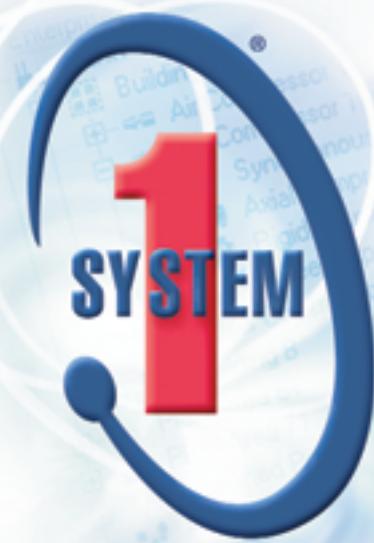
This initial release provides support for our new Snapshot™ for Windows® CE portable data collector and analyzer. However, System 1™ will rapidly evolve to incorporate both online and offline modes of data acquisition, with support for many of our communications processors such as TDXnet™ and DDI (Dynamic Data Interface), as well as our Trendmaster® 2000 system hardware. Other machinery management tools, like balancing software, and technologies, such as oil analysis, are also planned for inclusion in System 1™.

Features of System 1™ include:

- Enhanced graphical views of equipment and instrument assets
- Enhanced navigation
- True client/server architecture
- Modular design
- A single configuration utility with features for improved speed and accuracy
- Remote access for off-site analysis
- Rolling element bearing support
- A complete set of diagnostic plot formats
- Advanced alarming and alarm management
- Third-party interfaces
- Document management

Snapshot™ for Windows® CE

While portable data collection products are not new for Bently Nevada, improving our existing Snapshot™ product line to create Snapshot™ for Windows® CE involved the most extensive user needs definition process of any product Bently Nevada has ever developed. Users were invited to participate in our product definition discussions and exercises that took place in numerous sessions on three continents. These sessions took customer groups through the process of identifying their needs for portable data collection and analysis. These needs were then refined and prioritized by customers in terms of what was most important. The result is a portable data acquisition and diagnostic system that is focused entirely on customer needs.

Snapshot™ for Windows® CE! It's here!

Snapshot™ for Windows® CE is available now and will be completely supported by System 1™. Integration with the host System 1™ software and the ability to interface multiple Snapshot™ for Windows® CE devices provide a cost-effective entrance system into a machinery management platform. The System 1™ platform allows users a path to future integration of offline, periodic online, and continuous online data acquisition with a single display, open database, and many other machinery management tools. Starting with portable data collection, Bently Nevada offers you a means to manage all your machinery assets.

Snapshot™ for Windows® CE features two fully functional channels and a third channel for phase and speed input. It is designed to support the field surveillance needs of both Operations and Maintenance personnel. At less than 1.8 kg

Data Collection:
Time = Money

Our Vice President of Engineering, Randy Chitwood, recently returned from several weeks of international travel. Among his activities was a chance to review our new Snapshot™ for Windows® CE portable data collector with customers. Their response to the product? *They liked it so much, they didn't want to give it back!*

They specifically commented on how quickly it obtained readings, compared to the other data collectors they have been using. They estimated the improved speed of data collection meant one less person would be required to collect data; a person who could instead be used to correct (rather than detect) problems. Faster data collection was a feature that was ranked very highly by our customers during the focus groups that were held prior to actual product design. It's gratifying to know that not only did we achieve this goal, but that our customers were quick to translate this improvement in speed to cost savings – a maintenance department capable of doing more work with the same number of employees.

They also remarked about how the product correctly measured direct, unfiltered vibration, in contrast to products they have been using which "derived" this reading (see sidebar on page 28). ↺

(4 lb), it is one of the lightest portable data collection tools available, allowing single-handed use for extended periods of time. The removable lithium ion battery provides an *in-use* battery life of at least 8 hours.

Ease of use is a key feature of the Snapshot™ for Windows® CE package. With a clear touch-screen, ¼VGA display, and ergonomically designed keypad, it is simple to operate with either the left or right hand, even while wearing gloves. The backlit display provides convenient viewing of diagnostic plots. In-field analysis and configuration capabilities, along with quick navigation and the ability to view previously collected data, baseline data, and trends, are standard features of this system.

Designed for the industrial environment, Snapshot™ for Windows® CE is also certified for use in hazardous areas with CSA and EExn approvals. The injection-molded Polycarbonate/ABS casing material provides high impact resistance and durability.

A wide variety of measurement types and signal-processing options are available with Snapshot™ for Windows® CE. Large data collection schedules can be accommodated with 24 megabytes of standard on-board memory and extensive in-field analysis capabilities. Support is provided for proximity, REBAM®, velocity, and accelerometer vibration transducers, a temperature measurement option, numeric data, notes, and user-configurable dynamic inputs.

Setting the standard – it's what you expect from Bently Nevada, the world's leading provider of machinery protection and management systems and services. For more information on System 1™ or Snapshot™ for Windows® CE, contact your local Bently Nevada or Bently Nevada (U.K.), Ltd.* sales or service professional. ↻

*Snapshot™ for Windows® CE joins a growing list of products developed and manufactured exclusively by our subsidiary, Bently Nevada (U.K.), Ltd.

Why Do Two Portable Instruments Read Direct Vibration Amplitudes Differently?

T his is a commonly asked question. Differences can be attributed to either the sample of data that the measurement is performed on or the way in which the measurement is made.

One of the first things to check is the frequency range over which the direct measurement was performed. For example, consider a signal that has frequency components at 300 and 600 Hz. If a measurement were taken using an instrument with a filter band of 3 to 500 Hz, a direct measurement would not include the 600 Hz component, and therefore would read lower than an instrument with a filter band of 3 to 1000 Hz. Differences in direct filter bands also contribute to measurement differences between portable instruments and permanently installed vibration monitors.

Some portable instruments calculate the direct amplitude from the frequency spectrum. Any frequency component that is outside (usually above) the spectrum frequency band would not be included in the direct measurement. This means that a change in the spectrum sample frequency range can change the direct amplitude reading. If a frequency component exists that is higher in frequency than the spectrum frequency band, the indicated direct amplitude level will be lower than the actual amplitude.

Differences also occur when comparing an instrument that measures zero-to-peak directly (sometimes referred to as true peak) with an instrument that measures root mean square (rms) and then converts to zero-to-peak by multiplying the rms reading by 1.414. This conversion works for a sine wave but does not give accurate readings when converting a complex signal. For a complex signal, a converted rms to peak measurement would read low when compared to a true peak measurement. Bently Nevada instruments measure true zero-to-peak and do not convert rms measurements.

In summary, care should be exercised when using an instrument where the direct amplitude measurement can vary with a change in spectrum plot frequency range or a change in the number of lines of frequency resolution. It is best practice to use an instrument where the direct amplitude measurement is independent of any other data type. All Bently Nevada instruments, including the new Snapshot™ for Windows® CE portable data collector, perform the direct amplitude measurement independently of any other data type configuration. ↻